

Counting Carbohydrates for the Blind

An Online Instructional Design Study

Stacie Phasouk

University of Hawaii at Manoa
Learning Design & Technology



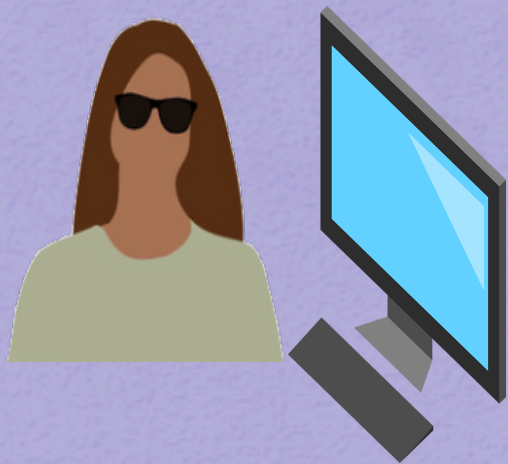
Agenda

- Rationale for Topic
- Project Development
- Results and Findings
- Conclusion

Rationale for Topic

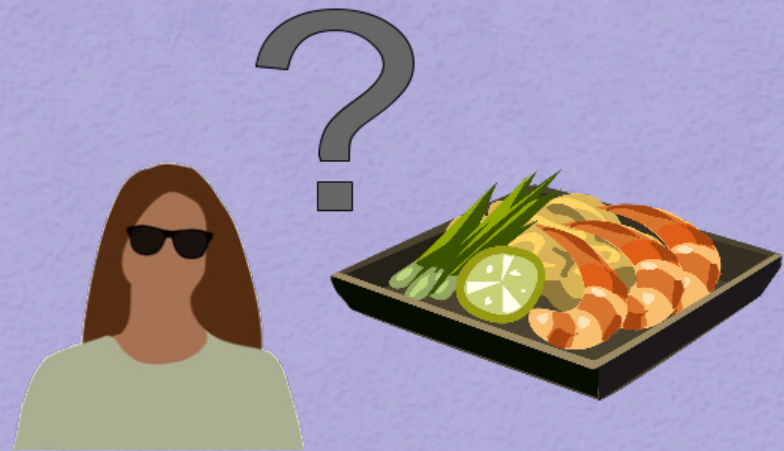
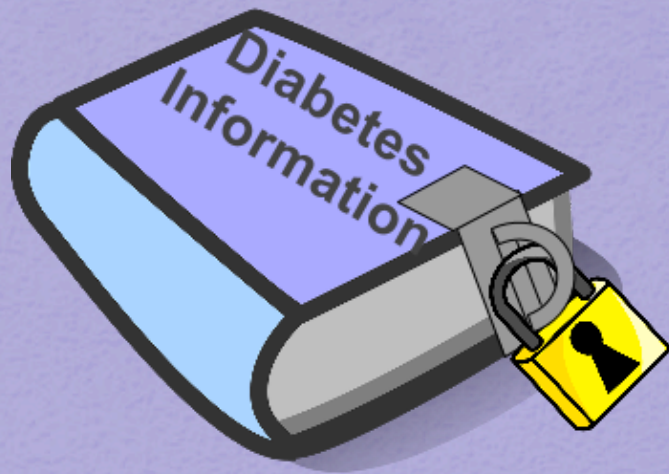
Rationale for Topic:

From personal experience



Inaccessible or Irrelevant Information

Estimate portion size



Seeking Information



Review of Literature

- *Face-to-face not necessarily accessible (Williams, 2009)*
- *Alternative: Web-based approach for targeted audience (Pal, et al., 2014)*

Project Defined

Design and evaluate:

- An accessible web-based module to teach blind adults with or at risk of developing Type 2 Diabetes how to count carbohydrates to help manage or prevent the development of Diabetes.

My research questions include:

- How appropriate and sufficient Is the content presented to this specific audience?
- How effective are the methods of delivery and instruction?

Content Development

Diabetes Self Management = Too Broad

Counting Carbohydrates = Focused



Possible Web Tools



Draft of Carbohydrate Counting for the Blind

[HOME](#) [Introduction to Diabetes](#) [Understanding Carbohydrates](#) [Carbohydrate Counting](#) [Obtaining Carbohydrate Information](#)

[Tutorials](#)

Edit this form

Consent to Participate in Research Project:

Counting Carbohydrates for the Blind: An Instructional Design Project

University of Hawaii

Consent Form

My name is Stacie Phasouk, and I am a graduate student at the University Of Hawaii. A requirement for earning my Master's degree is to conduct a research project. The purpose of my instructional design project is to develop and

Poll Question

Do you know how a screen reader moves through a webpage?

Using a Screen Reader

Draft of Carbohydrate Counting for the Blind

Search this site

[HOME](#) [Introduction to Diabetes](#) [Understanding Carbohydrates](#) [Carbohydrate Counting](#) [Obtaining Carbohydrate Information](#)

[Tutorials](#)

Navigation

[HOME](#)

[Carbohydrate Counting](#)

[Consent Form](#)

[Introduction to Diabetes](#)

[Obtaining Carbohydrate Information](#)

[PRE-SURVEY](#)

[PRE-TEST](#)

► [Tutorials](#)

[Understanding Carbohydrates](#)

[Sitemap](#)

Consent to Participate in Research Project:

Counting Carbohydrates for the Blind: An Instructional Design Project

University of Hawaii

Consent Form

My name is Stacie Phasouk, and I am a graduate student at the University Of Hawaii. A requirement for earning my Master's degree is to conduct a research project. The purpose of my instructional design project is to develop and evaluate the effectiveness of a web-based module that teaches blind adults who may be at risk of developing or who have already developed Diabetes on how to count carbohydrates as a way to help prevent or help manage Diabetes.

I am asking you to participate in this project because you are over the age of 18, have access to the Internet and have a visual impairment.

Time and Activity Commitments:

Once you have consented to participate, you will be asked to fill out a pre-survey followed by a pre-test.

In the module, there are 4 sections. Each section ends with a quiz. The last two

Using a Screen Reader

Draft of Carbohydrate Counting for the Blind

Search this site

[HOME](#) [Introduction to Diabetes](#) [Understanding Carbohydrates](#) [Carbohydrate Counting](#) [Obtaining Carbohydrate Information](#)

[Tutorials](#)

Navigation

[HOME](#)

[Carbohydrate Counting](#)

[Consent Form](#)

[Introduction to Diabetes](#)

[Obtaining Carbohydrate Information](#)

[PRE-SURVEY](#)

[PRE-TEST](#)

► [Tutorials](#)

[Understanding Carbohydrates](#)

[Sitemap](#)

Consent to Participate in Research Project:

Counting Carbohydrates for the Blind: An Instructional Design Project

University of Hawaii

Consent Form

My name is Stacie Phasouk, and I am a graduate student at the University Of Hawaii. A requirement for earning my Master's degree is to conduct a research project. The purpose of my instructional design project is to develop and evaluate the effectiveness of a web-based module that teaches blind adults who may be at risk of developing or who have already developed Diabetes on how to count carbohydrates as a way to help prevent or help manage Diabetes.

I am asking you to participate in this project because you are over the age of 18, have access to the Internet and have a visual impairment.

Time and Activity Commitments:

Once you have consented to participate, you will be asked to fill out a pre-survey followed by a pre-test.

In the module, there are 4 sections. Each section ends with a quiz. The last two

Using a Screen Reader

Draft of Carbohydrate Counting for the Blind

Search this site

[HOME](#) [Introduction to Diabetes](#) [Understanding Carbohydrates](#) [Carbohydrate Counting](#) [Obtaining Carbohydrate Information](#)

[Tutorials](#)

Navigation

[HOME](#)

[Carbohydrate Counting](#)

[Consent Form](#)

[Introduction to Diabetes](#)

[Obtaining Carbohydrate Information](#)

[PRE-SURVEY](#)

[PRE-TEST](#)

► [Tutorials](#)

[Understanding Carbohydrates](#)

[Sitemap](#)

Consent to Participate in Research Project:

Counting Carbohydrates for the Blind: An Instructional Design Project

University of Hawaii

Consent Form

My name is Stacie Phasouk, and I am a graduate student at the University Of Hawaii. A requirement for earning my Master's degree is to conduct a research project. The purpose of my instructional design project is to develop and evaluate the effectiveness of a web-based module that teaches blind adults who may be at risk of developing or who have already developed Diabetes on how to count carbohydrates as a way to help prevent or help manage Diabetes.

I am asking you to participate in this project because you are over the age of 18, have access to the Internet and have a visual impairment.

Time and Activity Commitments:

Once you have consented to participate, you will be asked to fill out a pre-survey followed by a pre-test.

In the module, there are 4 sections. Each section ends with a quiz. The last two

Using a Screen Reader

Draft of Carbohydrate Counting for the Blind

Search this site

[HOME](#) [Introduction to Diabetes](#) [Understanding Carbohydrates](#) [Carbohydrate Counting](#) [Obtaining Carbohydrate Information](#)
[Tutorials](#)

Navigation

[HOME](#)

[Carbohydrate
Counting](#)

[Consent Form](#)

[Introduction to
Diabetes](#)

[Obtaining
Carbohydrate
Information](#)

[PRE-SURVEY](#)

[PRE-TEST](#)

► [Tutorials](#)

[Understanding
Carbohydrates](#)

[Sitemap](#)

Consent to Participate in Research Project:

Counting Carbohydrates for the Blind: An Instructional Design Project

University of Hawaii

Consent Form

My name is Stacie Phasouk, and I am a graduate student at the University Of Hawaii. A requirement for earning my Master's degree is to conduct a research project. The purpose of my instructional design project is to develop and evaluate the effectiveness of a web-based module that teaches blind adults who may be at risk of developing or who have already developed Diabetes on how to count carbohydrates as a way to help prevent or help manage Diabetes.

I am asking you to participate in this project because you are over the age of 18, have access to the Internet and have a visual impairment.

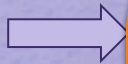
Time and Activity Commitments:

Once you have consented to participate, you will be asked to fill out a pre-survey followed by a pre-test.

In the module, there are 4 sections. Each section ends with a quiz. The last two

Screen Reader “View”

Consent
Form
inside
iFrame



Link Draft of Carbohydrate Counting for the Blind
Header Draft of Carbohydrate Counting for the Blink Header

Edit Field Search this site Button
Link HOME
Link Introduction to Diabetes
Link Understanding Carbohydrates
Link Carbohydrate Counting
Link Obtaining Carbohydrate Information
Link Tutorials

Consent to Participate in Research Project:
Counting Carbohydrates for the Blind:
An Instructional Design Project
University of Hawaii

Consent Form

My name is Stacie Phasouk, and I am a graduate student at the University Of Hawaii. A requirement for earning my Master's degree is to conduct a research project. The purpose of my instructional design project is to develop and evaluate the effectiveness of a web-based module that teaches blind adults who may be at risk of developing or who have already developed Diabetes on how to count carbohydrates as a way to help prevent or help manage Diabetes.

I am asking you to participate in this project because you are over the age of 18, have access to the Internet and have a visual impairment.

Time and Activity Commitments:

Once you have consented to participate, you will be asked to fill out a pre-survey followed by a pre-test.

In the module, there are 4 sections. Each section ends with a quiz. The last two sections will also have practice activities. The end of the module has a final test that will have questions on all four sections. Once you have completed the module, you will be asked to fill out a satisfaction survey. The module is estimated to take 60 to 90 minutes to complete.

Benefits and Risks:

There may be no direct benefit to you, but the information gathered from the project may help to provide more accessible resources to blind adults dealing with preventing or managing their Diabetes. There is little to no risk to you in participating in this project.

Confidentiality and Privacy:

The data taken from your participation in this study will be used solely for the purpose of this usability study. I will not ask you for any personal information, such as your name or address. I will not include any personal information in your survey responses.

I will keep all information securely stored on a protected computer. I will not use your name or any personal information that could identify you in my research report. Only my University of Hawaii advisor and I will have access to the information. Other agencies that have legal permission have the right to review research records. The University of Hawaii Human Studies Program has the right to review research records for this study.

Voluntary Participation:

Your participation in this project is completely voluntary. You may stop participating at any time. If you stop being in the study, there will be no penalty or loss to you.

Questions:

If you have any questions about this study, please call me at (808) 256-5096 or email me at phasouk@hawaii.edu. You may also contact my adviser, Dr. Peter Leong, at [phone # & email address]. If you have questions about your rights as a research participant, you may contact the UH Human Studies Program at 808.956.5007 or uhhrb@hawaii.edu.

Please check the box below and click the [submit](#) button if you agree to be a participant in the study.

By checking this box, I agree to all conditions outlined in this form.

Submit

Powered by

Simple Forms

This form is powered by Simple Forms

Please click the following link: Printed Copy of Consent Form
NEXT: Demographics Survey

Creative Commons License
Contact Us | Technical Support
Report Abuse | Powered By Google Sites

Testing Accessibility



Accessible Platform



to the rescue!

- *Navigable*
- *Accessible Interactivity*

The Module

Dashboard
 Courses
 Calendar
 Inbox
 Commons
 Account
 Help

Counting > Pages > Brief Introduction to Diabetes

Brief Introduction to Diabetes

What is diabetes?

Diabetes is a group of disorders that result in the buildup of glucose in the bloodstream over a prolonged period. There are several types of diabetes, but the most common forms are type 1 and type 2. Other forms include gestational diabetes (GDM), LADA and MODY.

What is type 1 diabetes?

Type 1 diabetes (T1D) is an autoimmune disease where the body's own immune system attacks and destroys insulin producing cells in the pancreas. It is not related to a poor diet or lack of exercise. Scientists do not know what triggers the immune system to attack the insulin producing cells. Type 1 Diabetes is currently not preventable and occurs at any age, but is most commonly diagnosed from infancy to late 30s. There are 1.25 million people in the United States living with Type 1 Diabetes making up only about 5% to 10% of the Diabetes population. All type 1 diabetics must take daily insulin injections or receive insulin through an insulin pump in order to stay alive. They must also monitor glucose levels as well as manage their diet and activity level on a daily basis.

Counting Carbs by Grams:

Counting carbohydrates by grams is much more accurate, but also more labor intensive. The easiest way to get an idea of how many grams of carbohydrates are in a food is through the nutrition facts. This information can be found on the back of canned and packaged food items.

Another way to count carbs by grams is to look at the nutrition information on the food packages. Here is an example of a nutrition label for Mrs. Field's chocolate chip cookies:

Serving Size: 1 Cookie (48g)	
Amount Per Serving	
Total Carbohydrate	29g
Dietary Fiber	1g
Sugars	19g
Protein	2g
Total Fat	10g
Saturated Fat	5g
Cholesterol	15mg
Sodium	170mg
Total Carbohydrate	29g

Source: <https://www.mrsfields.com/misc/nutrition-details/Semi-Sweet+Chocolate/1>

There are so many numbers. What do they all mean?

Module Sections

1. Brief Introduction to Diabetes
2. Understanding Carbohydrates
3. Basic Carbohydrate Counting
4. Tools & Techniques for Carbohydrate Counting

Quizzes for Feedback

Question 4

What other information besides total carbohydrates is needed when counting carbohydrates by grams?

- ☐ Calories
- ☐ Serving size
- ☒ fat
- ☐ sugar

Correct Answer

You Answered

Question 4

0 / 1 pts

What other information besides total carbohydrates is needed when counting carbohydrates by grams?

- ☐ Calories
- ☐ Serving size

☒ fat

Incorrect. Although fat is important to overall health, the serving size (along with total carbohydrates) is needed when counting carbs.

☐ sugar

Data Collection Tools

- Demographic Survey
- Pre and Post Tests
- End of Module Survey

The screenshot shows a web-based survey interface. At the top, it says 'Quizzes > Post Survey'. Below this is a header 'Post Survey' with a timestamp 'Started: Dec 18 at 3:09pm'. The main section is titled 'Quiz Instructions' and contains the text: 'This survey will provide data to help evaluate the module and your experience. Please answer honestly to ensure the best data is collected. To begin the survey, you may need to click "Take the Quiz."'. Below the instructions is a question box for 'Question 1' worth '1 pts'. The question is 'The website was easy to navigate.' and has five radio button options: 'Strongly Agree', 'Agree', 'Neutral', 'Disagree', and 'Strongly Disagree'. At the bottom, the start of 'Question 2' is visible, also worth '1 pts'.

Pre & Post Test Content

- Questions about Diabetes
- Questions about Carbohydrates
- Questions about Counting Carbohydrates

Pre & Post Test Questions

Pre

Milk contains carbohydrates.

- ☐ True
- ☐ False
- ☐ I don't know

Post

What in the list below "DOES NOT" contain carbohydrates?

- ☐ Milk
- ☐ Butter
- ☐ Yogurt
- ☐ Ice cream

Interested Participants



Actual Participants



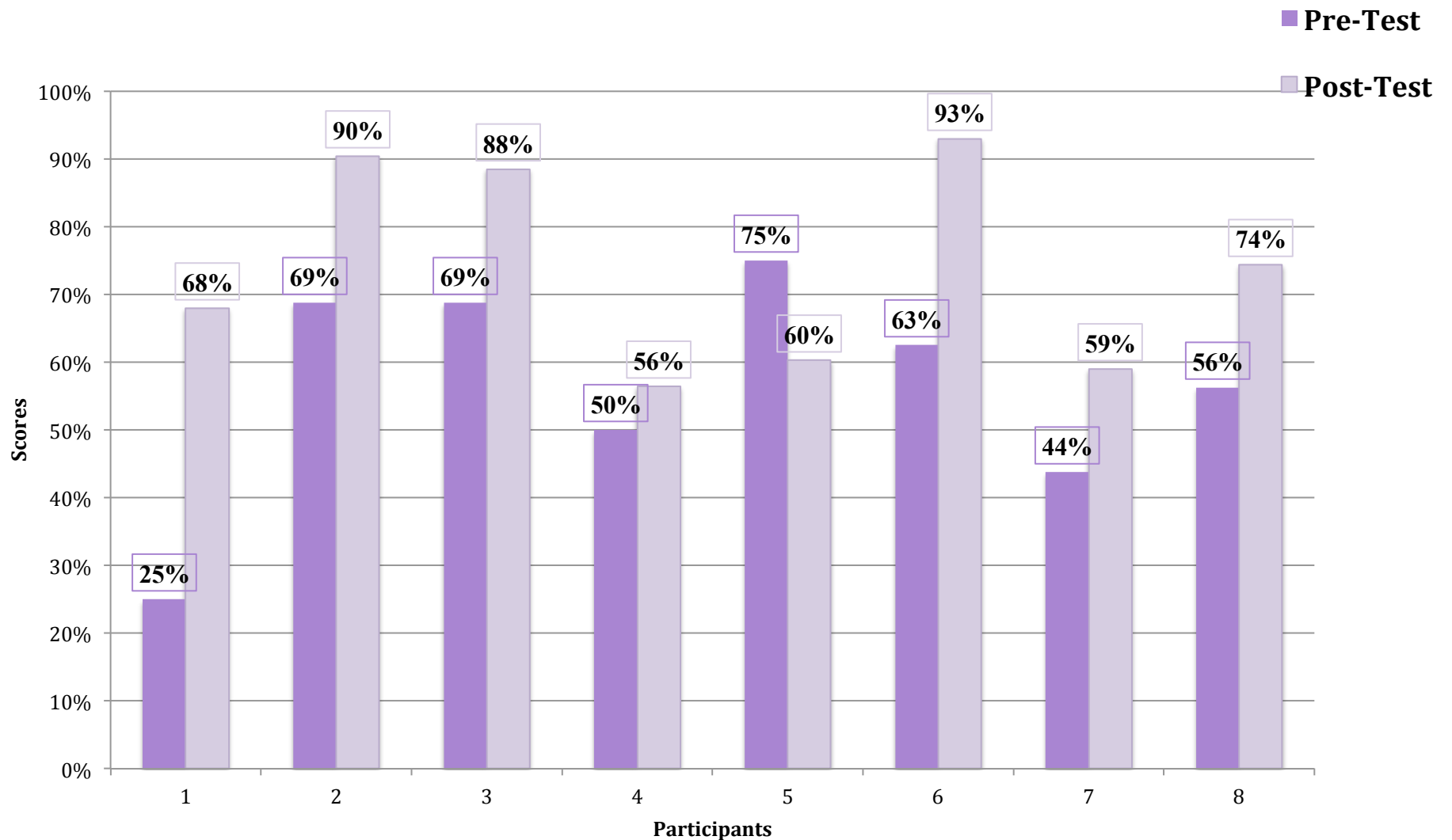
Results

Demographics

Demographics		Technology Utilized		Perception of Technology Skill			
Sex		Primary Browser Used		Beginner		Intermediate	Advanced
Male	0	Internet Explorer	5	Internet proficiency	1	3	4
Female	8	Safari	2				
Age		Firefox	0	Screen reader proficiency	1	3	4
25 and under	1	Chrome	1				
26-35	2	Other	0				
36-45	0	Use a Screen Reader					
46-60	2	Yes	8				
61-74	3	No	0				
75 and above	0						
Education Background							
High school	1						
AA	2						
BA	3						
MA	1						
Ph.D.	1						

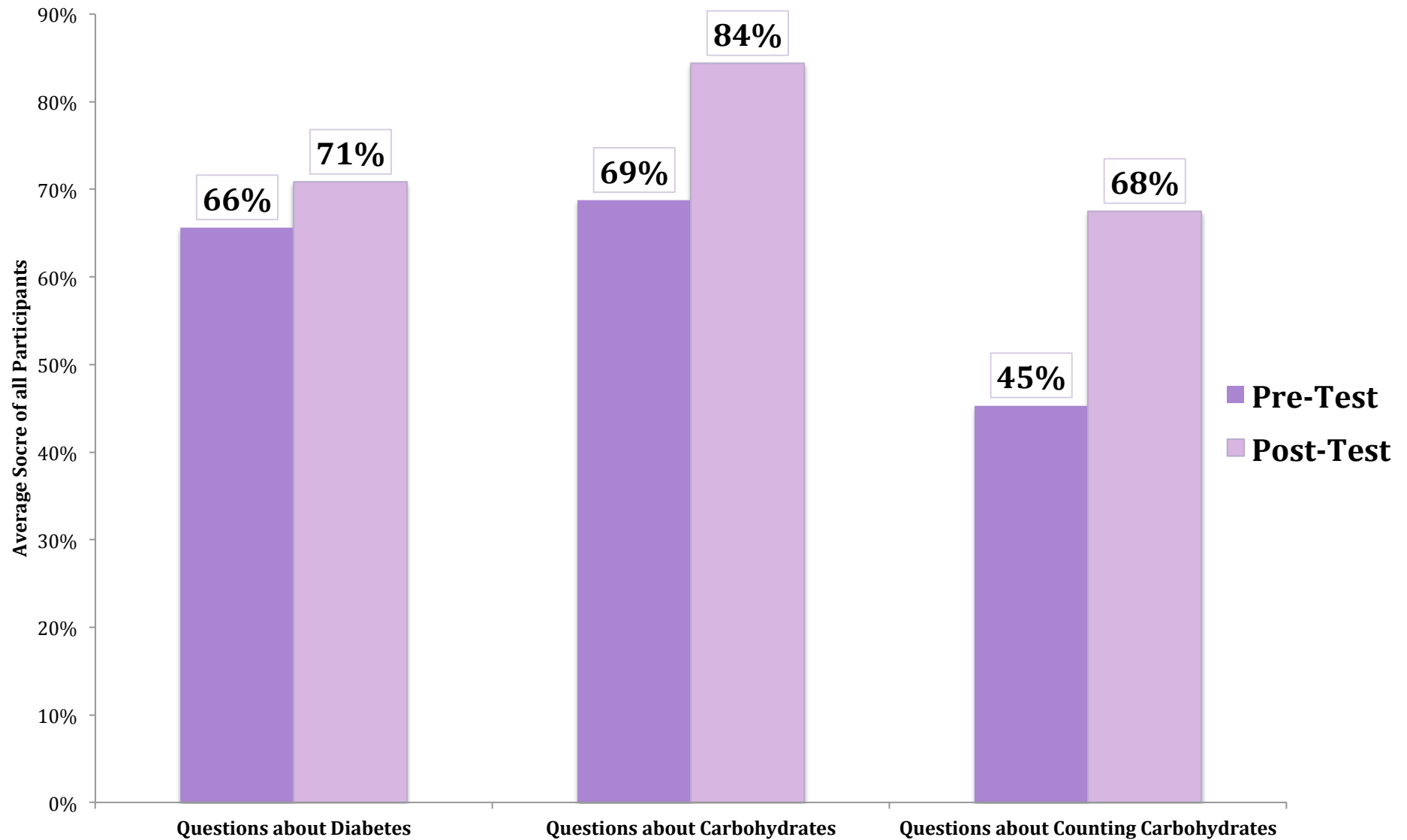
Results

Pre/Post Test Comparison

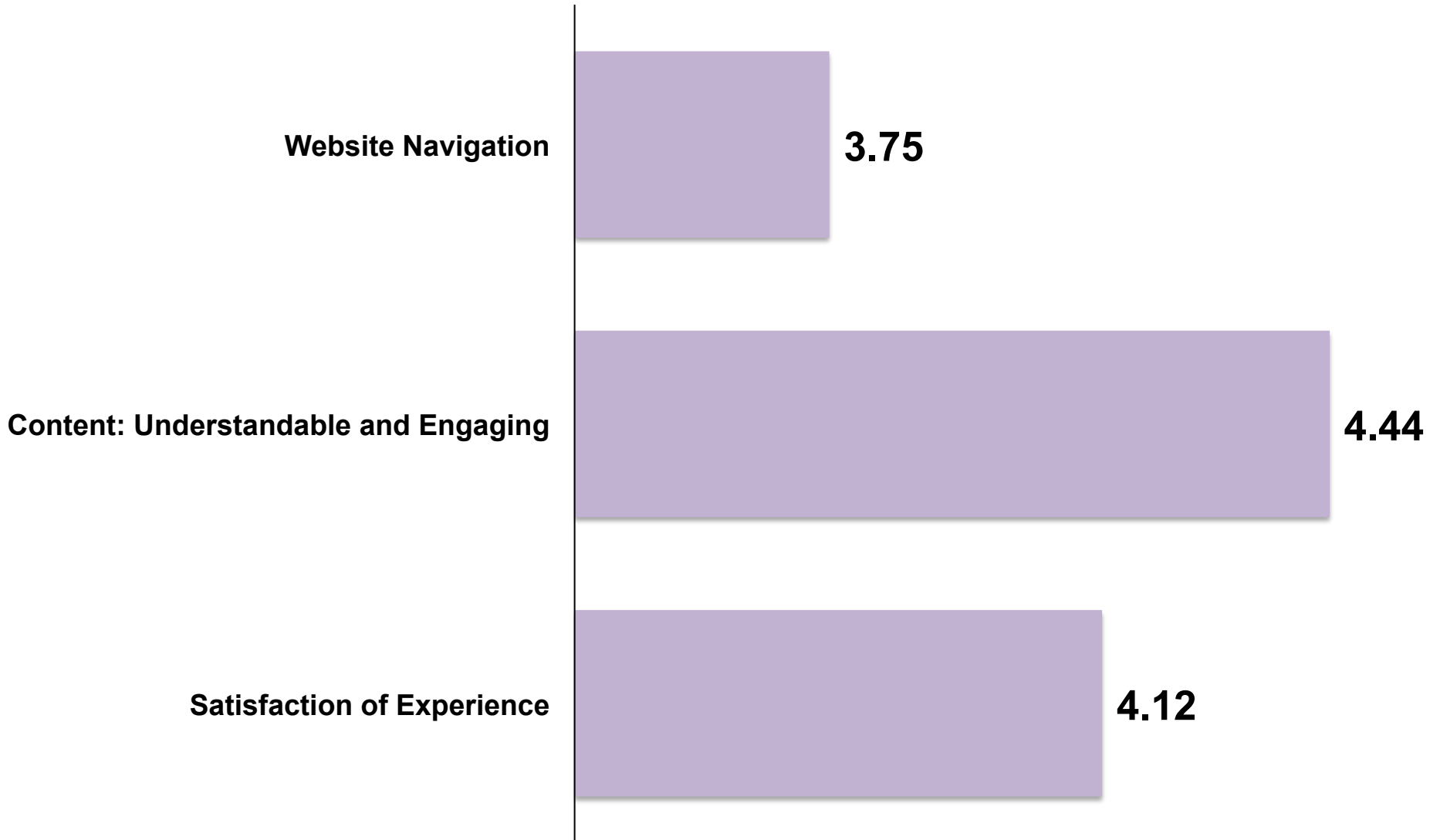


Results

Content Analysis



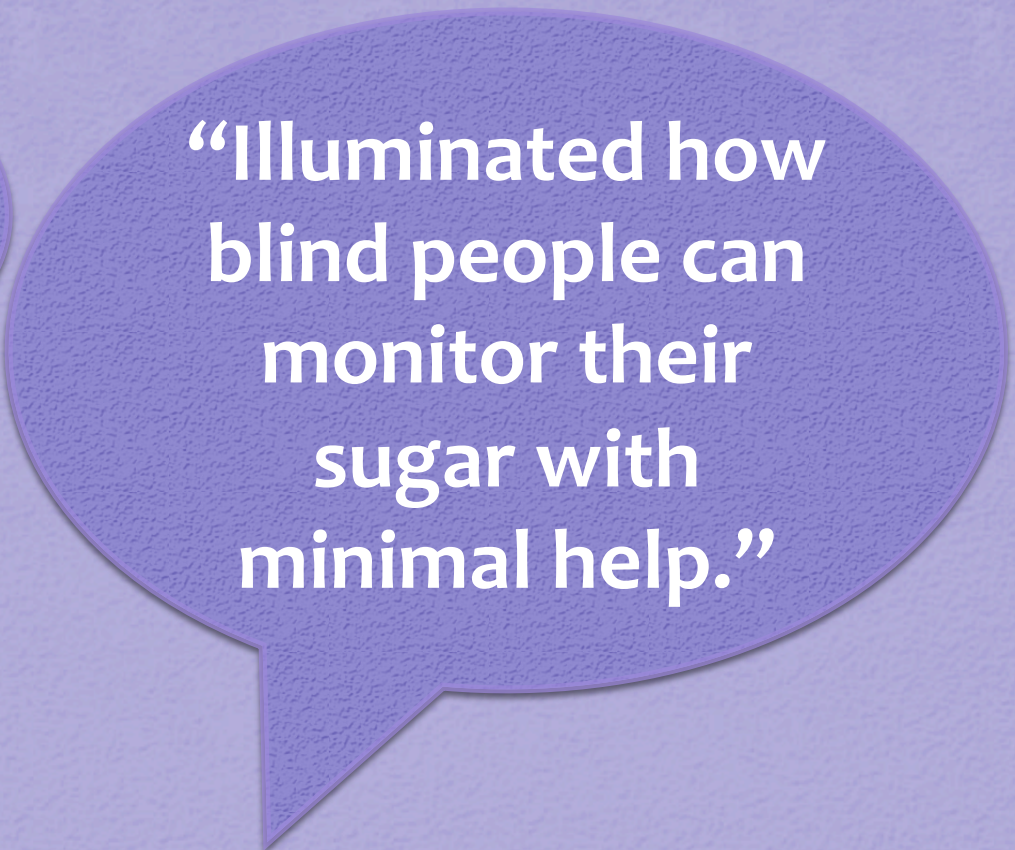
Post Survey



Feedback: Positive



“I enjoyed the
content...”

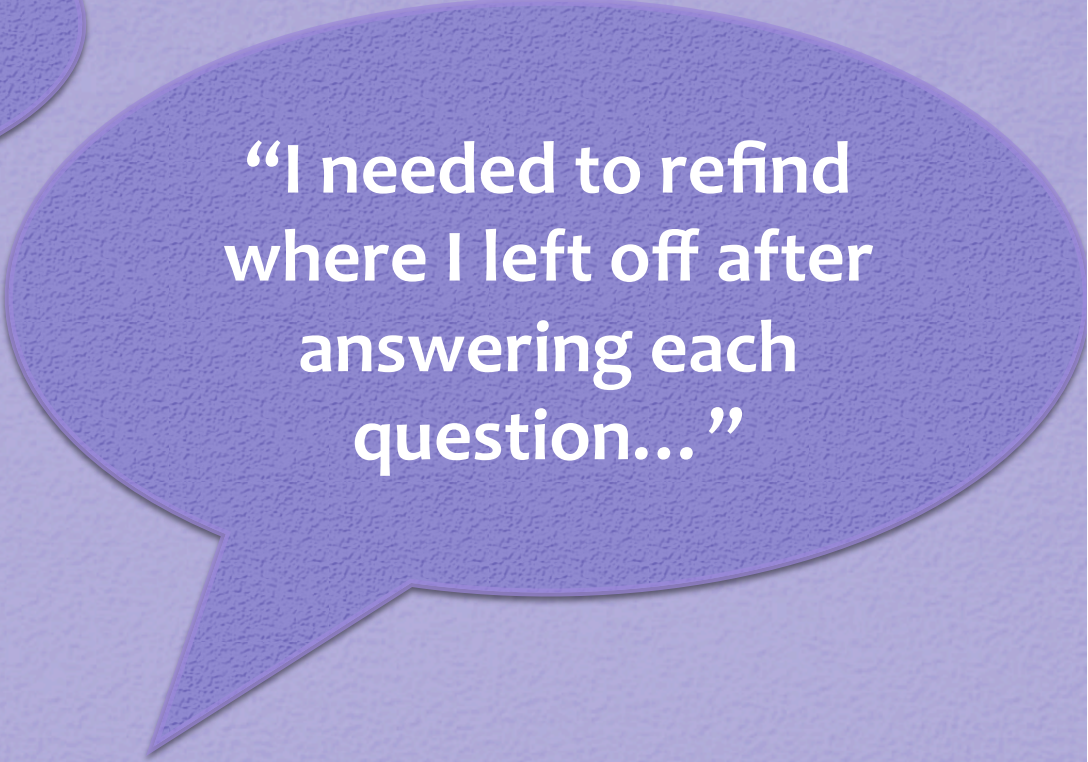


“Illuminated how
blind people can
monitor their
sugar with
minimal help.”

Feedback: Negative



“... the cursor
would jump...”



“I needed to refind
where I left off after
answering each
question...”

Navigation or Skill?



“I may have
overestimated my skill
level...”

Participant 6

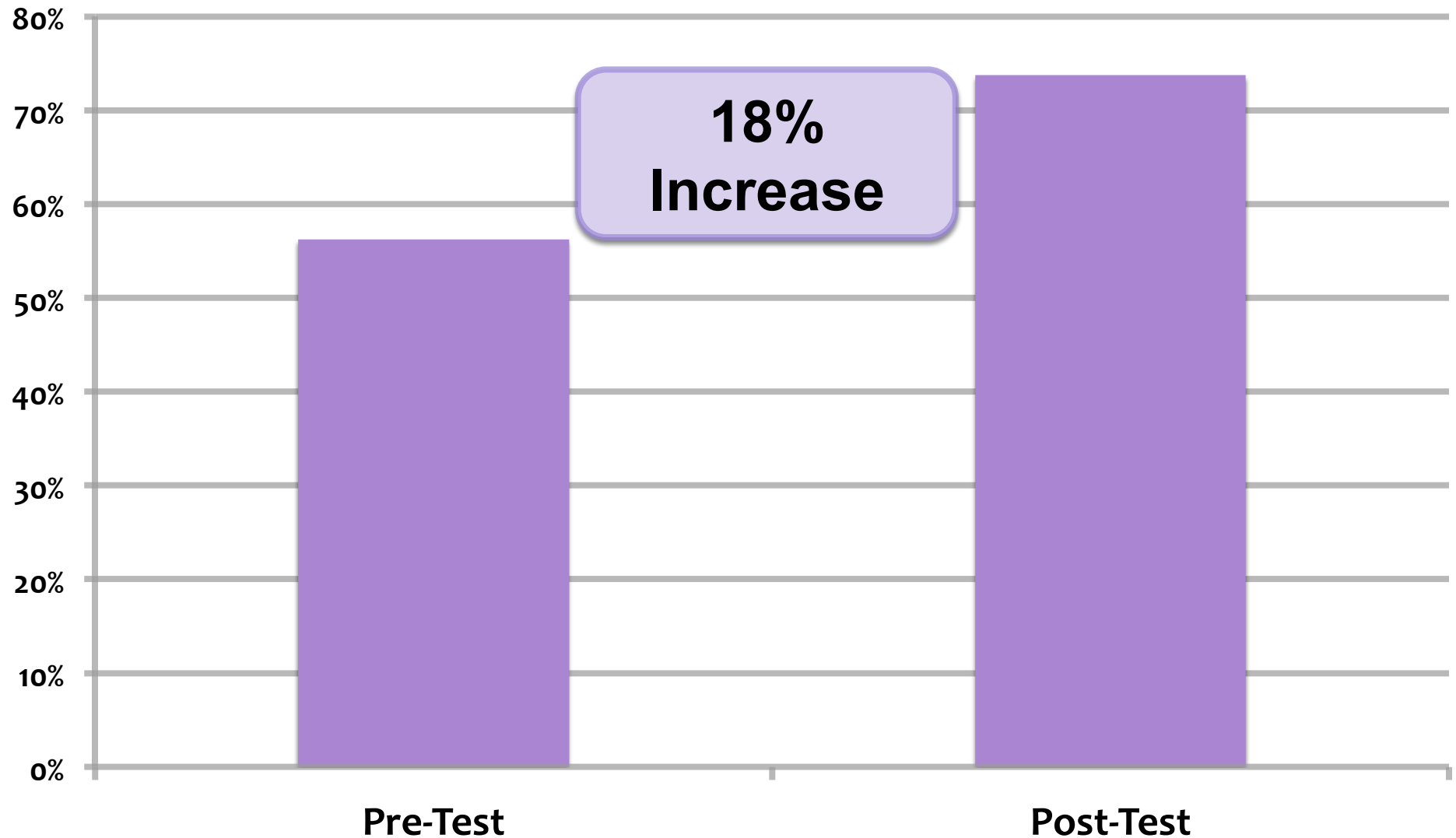
“Intermediate user of Screen Reader and Internet”

Feedback: Improvement



**“...more direction
on navigation”**

Successful Learning



Conclusion

Purpose and goals were met:

- *Increased knowledge of how to count carbohydrates*
- *Content was valuable to the specific audience*

Acknowledgements

- *Family*
- *Cohort and Critical Friends*
- *Professors and Instructors*

Questions

